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WASHINGTON, D. C.

Vol. 2, No. 10.

May, 1933.

Agriculture.

Agricultural research in New Hampshire: Annual report, 1932. 1933. 27p.
New Hampshire. Agricultural Experiment Station. Bulletin no. 270.

All set to go on "farm relief". Implement and Tractor Trade Journal.
v. 47, no. 9. May 6, 1933. p. 10. Secretary Henry A. Wallace
of Department of Agriculture has asked governor of each state to set up
advisory committee to cooperate with federal authorities. Proposed ad-
visory committee will include governor, secretary or commissioner of
agriculture, state director of agricultural extension, chief justice of
supreme court and representative farmer.

Some hurdles for recovery: Editorial. Implement and Tractor Trade
Journal. v. 47, no. 9. May 6, 1933. p. 7. Discussion of two
bills dealing with currency inflation and contemplated governmental con-
trol and distribution of production and wages.

Air conditioning.

Air distribution in the home: Editorial. Aerologist. v. 9, no. 5.
May 1933. p. 3-4. Ideal duct design in our judgment is complete dis-
tribution by ducts from unit to rooms it serves with enough resistance
in return grilles, without ducts, to maintain pressure in room sufficient
to balance infiltration. This is obvious and economical method of con-
trolling air flow, preventing drafts, and of keeping interior of building
clean.

Attic fans cool houses in summer. Electrical World. v. 101, no. 17.
April 29, 1933. p. 544-545. Data available from New Orleans Public
Service Company indicate that house temperature can be lowered 5 to 10
deg. at nightfall because of circulation created.

Comfort air conditioning. By Claude A. Bulkeley. Heating, Piping and
Air Conditioning. v. 5, no. 4. April 1933. p. 221-223. Cooling
coil or surface cooling method.

Estimating annual power and water costs for air conditioning. By E. P.
Wells. Heating and Ventilating. v. 20, no. 2. February 1933.
p. 39-40.

Fundamental principles in the design of dry air filters. By Otto Wechsberg.
Heating, Piping and Air Conditioning. v. 5, no. 4. April, 1933.
p. 217-220.

Associations.

1933 A. S. A. E. annual meeting program. Agricultural Engineering.
v. 14, no. 4. April, 1933. p. 113.

Belts.

V-belt drives for farm motors and equipment. By Hobart Beresford.
1932. 14p. Idaho. Agricultural Experiment Station. Circular
no. 70.

Building construction.

Committee on construction costs. Science. v. 76, no. 1976. November
11, 1932. p. 430. To encourage use of new wood construction
methods. Appointed by Secretary of Commerce. Will cooperate with
governmental agencies in applying new construction systems to
American conditions.

Comparative details - Group 6. Door hoods. Pencil Points. v. 14,
no. 3. March, 1933. p. 133-138.

Interlocked unit lumber saves building cost. Popular Mechanics
Magazine. v. 59, no. 3. March, 1933. p. 406. Simplified
and standardized into system of machined pieces. 10 basic framing mem-
bers, 9 lengths of square-end board stock, 6 lengths of diagonal-
end sheathing, all precision cut. All framing, joist headers,
joists, sills, studs and plates go together with strong interlocking
joint made possible by dovetail.

Investigation of chimney performance. By J. R. Moynihan. 1933.
38p. Cornell University. Engineering experiment station.
Bulletin no. 16.

Mechanics of using nails. Popular Mechanics Magazine. v. 59,
no. 3. March, 1933. p. 482-483.

Modern connectors for timber construction: Report prepared jointly
by National Committee on Wood Utilization, U. S. Department of
Commerce and Forest Products Laboratory, Forest Service, U. S.
Department of Agriculture. Washington. U.S. Government Printing
Office, 1933. 147p.

Nail in time saves nine. By J. Brownlee Davidson. Successful
Farming. v. 30, no. 5. May, 1933. p. 8, 34-35.

\$19,472,000 in construction awards. Manufacturers Record. v. 102,
no. 2. February, 1933. p. 28. Building and engineering con-
tracts let in southern states during January in aggregate are ahead
of total awards for each of first two months of last year. Pro-
jected construction work is 70 per cent above January, 1932.

Wood-beam design method promises economics. By J. A. Newlin, G.E.
Heck, and H.W. March. Engineering News Record. v. 110, no. 19.
May 11, 1933. p. 594-596. Tests and analyses show horizontal
shear stresses to be lower than usually assumed, by virtue of top
and bottom halves of beam acting as separate units. New design
method takes this two-beam action into account.

Columbia Basin.

Columbia basin development plans take on new form. Engineering News Record v. 110, no. 19. May 11, 1933. p. 602. Organization of Columbia basin power and irrigation district and immediate start of work without authorization of Congress has been proposed by Columbia basin commission following conference of representatives of state of Washington with President Roosevelt. Power and irrigation district could be organized under laws of state and district could apply to R.F.C. for loan to finance undertaking. State could share in cost of work if state bond issue of \$10,000,000 for public works is held constitutional.

Cotton.

Cotton harvesting methods on trial. By H. L. Gantz. Farm and Ranch. v. 52, no. 4. February 15, 1933. p. 1, 10. Project carried on by Texas Cotton Cooperative Association to bring something definite and practical regarding different methods of harvesting cotton. This project involved use of cotton-picking machine and employment of snap and picking methods of harvesting, all within same field of 12 acres containing uniformity of soil and planted to pure Mobane cotton. To make adequate study of methods employed in harvesting, gin out-turn, class, cost, time in gathering, and cost of ginning, complete record was kept showing detailed information.

Early years of the cotton gin. By Charles A. Bennett. Cotton and Cotton Oil News. v. 34, no. 13. April 1, 1933. p. 5-10, 44-45, 47.

Special report on revised estimates of United States cotton acreage and yield, 1866-1931. 1933. 40p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Economics.

Dairy equipment.

Good housing protects the dairy dollar. By Wilber J. Fraser. Hoard's Dairymen. v. 78, no. 4. February 25, 1933. p. 71, 86. Poor housing cuts off far more profit than product. No matter how well cow is fed and cared for, if she is not comfortably housed she cannot make good production and profit.

Ditches.

Flexible lining of tile used for drainage ditch. Engineering News Record. v. 110, no. 19. May 11, 1933. p. 585.

Drainage.

Land drainage in Pennsylvania. By John R. Haswell. 1927, 23p. Pennsylvania. Agricultural Experiment Station. Circular no. 112.

Maulwurfsdrainung ohne und mit Tonrohren unter besonderer Berücksichtigung des Poppelsdorfer Drainbaus. By C. Kuhlowind. Berlin. Paul Parey, 1932. 77p. Mole drainage.

Electric Service, Rural.

Rural line construction: Report of the New Hampshire rural electrification committee. 1933. 34p.

Electricity on the Farm.

Electricity, the modern miracle. By Samuel C. Moore. New England Homestead. v. 106, no. 6. March 18, 1933. p. 3, 11.

Electricity, the perfect servant. By P. O. Davis. Progressive Farmer. v. 48, no. 4. April, 1933. p. 4.

Engines.

Adjustment of automotive carburetors for economy. By S. H. Graf and G. W. Gleeson. 1930. 40p. Oregon. Engineering Experiment Station. Circular series, no. 2.

Fuel vaporization and its effect on combustion in a high-speed compression-ignition engine. By A. M. Rothrock and C. D. Waldron. 1932. 25p. National Advisory Committee for Aeronautics. Report no. 435.

Water wheel covering principles applied to Diesel engines. Power. v. 77, no. 5. May, 1933. p. 228-229.

Erosion Control.

Conserve the soil and water in Texas. By A. D. Jackson. Farm and Ranch. v. 52, no. 4. February 15, 1933. p. 3, 7. Harnessing wasting resources will contribute to prosperous agriculture.

Earth rotation and river erosion. By Professor Herman L. Fairchild. Science. v. 76, no. 1976. November 11, 1932. p. 423-427.

Forest to be used to check run-off against rainfall. Engineering News Record. v. 110, no. 17. April 27, 1933. p. 530. Creation of experimental forest, consisting of 13,000 acres in headwaters of San Dimas and Big Dalton Canyons in Los Angeles County, Calif., for the purpose of studying over long period of years effect of watershed covering on runoff and erosion. Experiment to be conducted over period of fifteen to thirty years. Plan in brief calls for placing of small dams in mouths of three tributary canyons of Big Dalton at elevation of approximately 2,500 ft., and same number of dams in San Dimas Canyon tributaries at elevation of 5,000 ft. Forestry service forces will be able to check runoff at dams and amount of rainfall on watershed over period of years, following which chapparal will be burned off and comparative figures on runoff and erosion obtained.

New style mattress on Mississippi river bed. Science News Letter. v. 23, no. 627. April 15, 1933. p. 236. Mixture of about 12 per cent paving asphalt, 66 per cent river sand, and 22 per cent loess poured over sheet of chicken wire.

Oklahoma guarding her resources. By C. P. Blackwell. Farm and Ranch. v. 52, no. 6. March 15, 1933. p. 2, 7. Conserving her soil and water considered most important project for future welfare.

Erosion Control. (Cont'd)

Soil erosion and its prevention (A partial list of references.) Revised edition. 1933. 32p. Mimeographed. U.S. Department of Agriculture. Bureau of Agricultural Engineering.

Soil erosion control by terracing: History and accomplishments. By C.E. Ramser. Agricultural Engineering. v. 14, no. 4. April, 1933. p.103-104. Loss of valuable resources of agricultural lands through soil erosion represents perhaps our greatest national waste of natural resources.

Fans, Mechanical.

Fan engineering. Edited under the direction of Willis H. Carrier. Buffalo, N.Y. Buffalo Forge Company, 1933. 622p. Engineer's handbook on air, its movement and distribution in air conditioning, combustion, conveying and other applications employing fans.

Performance of propeller fans. By A. I. Brown. 1933. 33p. Ohio. Engineering Experiment Station. Bulletin no. 77.

Farm Buildings and Equipment.

Concrete farm building. By G. S. Bartleson. American Builder. v. 54-55. New ways to build better forms at less cost.

Practical hog houses for Indiana. By G. O. Hill and J. W. Schwab. 1933. 8p. Purdue University. Department of Agricultural Extension. Extension bulletin no. 76.

Farm Machinery and Equipment.

Barge method of combine harvesting. By J. K. MacKenzie. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 94-96. Economy of operation and improvement in quality of grain harvested by this method makes it worthy of most serious consideration.

Better farm implements. Progressive Farmer. v. 48, no. 4. April, 1933. p. 8. It was found that these farmers who are making intelligent use of modern machinery are getting larger returns, according to studies made at Alabama Polytechnic Institute.

Cheaper corn production for the South. By L. R. Noel. Southern Agriculturist. v. 63, no. 3. March, 1933. p.5.

Combine harvester in Georgia. By H. E. Lacy and W. A. Minor, Jr., 1933. 28p. Georgia. State College of Agriculture. Bulletin no. 428.

Combine harvester in 1932. By J. E. Newman. Oxford, University Press, 1933. 20p. University of Oxford. Institute for research in Agricultural engineering.

Combining soybeans in the South. By R. B. Gray. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 93-94. Small combine should be built including following features: 1. Cut six-foot swath. 2. Pass material straight through machine in place of having so many corners for

Farm Machinery and Equipment. (Cont'd)

mass of material to turn. 3. Arrange cutter bar so as to cut beans within two inches of ground; construct reel so as to gradually pull bean vines in whatever condition onto platform without shock. 4. Power take-off so constructed that its speed would be independent of forward speed of tractor. 5. Probably overall width of 12 ft. 6. Weight of 3,000 to 4,000 lb. 7. Maximum cost to farmer of \$500. 8. Adaptable for small grain.

Cost study of filling silos with the field ensilage harvester. By P.I. Wrigley and A.W. Clyde. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 91-98, 100. Publication authorized by Director, Pennsylvania Agricultural Experiment Station. Technical paper no. 577.

Disk seeder for small farm is operated by hand. Popular Mechanics Magazine. v. 59, no. 3. March, 1933. p. 416. Disks are so designed that only small number are required to plant different kinds of seeds. Arrangement of furrow opener beside drivewheel keeps seeding at uniform depth over uneven ground, and this furrow opener is adjustable for depth. Planting disk is locked to drivewheel axle and is only moving part.

Drilling powdered agricultural limestone. By Wm. A. Albrecht and M.M. Jones. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 106-107.

Filling silos with the field ensilage harvester. By A. J. Schwantes and J. B. Torrance. 1932. 27p. Minnesota. Agricultural Experiment Station. Bulletin no. 290.

Glance back into the past. 1933. 2p. Mimeographed. J. I. Case Company, Racine, Wisconsin.

Grain combine for the corn belt. By I. D. Mayer. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 91-92, 96. Combine desired by farmers of corn belt is one with great flexibility. It should be capable of harvesting great variety of crops; it should have wide cutting range; it must have sufficient capacity to handle long and coarse-stemmed grain; it must be strong and durable, yet relatively light in weight so that it can be pulled over soft fields by medium size of tractor; it should be capable of quick, easy transportation from field to field; it should be simple machine which can be kept in adjustment and repair by farmer.

I'm for the machine! By C. I. Sersanous. Implement Record. v. 30, no. 5. May, 1933. p. 7-9. It is through employment of tractors upon farm that greater profits and more leisure hours will be enjoyed by people of farm.

Machinery at farm prices. Prairie Farmer. v. 105, no. 7. April 1, 1933. p. 4. J. I. Case Company has announced that on machines with selling price in excess of \$150, notes payable in 1933 can be paid up to 40 per cent with no. 2 wheat at 70 cents a bushel, both at Chicago. On items selling for less than \$150, one-half price differential is allowed on as much as 80 per cent of purchase price.

Farm Machinery and Equipment. (Cont'd)

Mower repair in the farm shops. By E. L. Barger. Better Farm Equipment and Methods. v. 5, no. 9. May, 1933. p. 6-8. Work sheet for checking over old mower is effective.

New tools for farmers. By E. T. Leavitt. New England Homestead. v. 106, no. 4. February 18, 1933. p. 4.

Oregon farmer's harrow invention. Implement Record. v. 30, no. 5. May, 1933. p. 12. Teeth are made of oil-tempered steel wire and are mounted on spike-tooth harrow frame. Teeth extend from coil spring and are constantly in motion.

Reducing costs of corn husking. By P. E. Johnston. 1932. 15p. Illinois Agricultural Experiment Station. Circular no. 396.

Suggested reforms in implement testing. Editorial. Implement and Machinery Review. v. 58, no. 696. April 1, 1933. p. 977. Must be less formal and inflexible, and approached not exclusively from angle of particular task in hand and with further and more important object of ultimately marshalling all facts and lessons of all tests of comparative description.

Fences.

Reduce cost of keeping up fences. Farm and Ranch. v. 52, no. 5. March 1, 1933. p. 13. Cost of keeping up fences is greatly reduced by giving posts proper treatment.

Fertilizer Spreaders.

Mechanical application of fertilizers to cotton in South Carolina, 1931. By G. A. Cunnings. 1933. 32p. U.S. Department of Agriculture. Circular no. 264.

New machines control fertilizer placements. American Fertilizer. v. 78, no. 3. February 11, 1933. p. 11. The fertilizer distributing machines to control accurately placement of fertilizer in cotton planting under variety of conditions have been designed and tested in experiments on flat-broken land by Bureau of Agricultural Engineering. Third machine has been improved to give various placements in raised bed. Machines can place fertilizer in bands at side and under seed. They can also place it in contact with seed, and apply it accurately at any desired rate or quantity.

Fire Protection.

No method yet developed to fireproof wood fully. Engineering News Record. v. 110, no. 19. May 11, 1933. p. 591-592. Experiments carried on at U.S. Forest Products Laboratory.

Spontaneous heating and ignition of hay. By Harry E. Roetho. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 101-102, 104.

Floods and Flood Control.

Certain flood-flow phenomena of Iowa rivers. By Floyd A. Nagler.
Monthly Weather Review. v. 61, no. 1. January, 1933. p. 5-7.

Improvement of the lower Mississippi river for flood control and navigation. By D. O. Elliott. Vicksburg, Miss., U.S. Waterways Experiment Station, 1932. 3v. Summarizes approximately one hundred years of cumulative study and experience.

Floors.

Quality floor surfacing methods. Part II. By G. S. Bartleson.
American Builder. v. 54, no. 6. March, 1933. p. 38-39, 52, 54.
Late developments in floor finishes and finishing.

Flow of Water and Gases.

Flow of fluids in pipes. Pt. I. By Emory Kemler. Heating, Piping and Air Conditioning. v. 5, no. 5. May, 1933. p. 252-256.
Types of fluid flow; Dimensional homogeneity; Critical Reynolds' number; Streamline flow; Analyses of turbulent-flow data; Conclusions.

Forage Drying.

Artificial drying of wheat to save farmer millions. Popular Mechanics Magazine. v. 59, no. 3. March, 1933. p. 408. Tested successfully by Canadian government scientists.

Influence of light, temperature, and soil moisture on the hardening process in alfalfa. By H. M. Tysdal. Journal of Agricultural Research. v. 46, no. 6. March 15, 1933. p. 483-515.

Fuels.

Alcohol-gasoline fuel and the motorists. Washington, D.C., American Automobile Association, 1933. 11p. Showing results of investigation of cost and efficiency of proposed fuel-blending schemes.

Fuel oil specifications. By A. J. Kraemer. Domestic Engineering. v. 141, no. 4. April, 1933. p. 63-64, 68-70.

Has science relieved our worries about surpluses? Idaho Farmer. v. 51, no. 5. February 9, 1933. p. 5. Discussion of Illinois experiments. It is belief that when sufficient demand for alcohol is developed to warrant its production on large scale it could be put to many other uses, for fuel in kitchen stoves, incubators and brooders; as raw material for production of ethylene; as raw material for production of acetic acid, and as raw material for production of alkyl halides. Based on motor fuel consumption and other possibilities mentioned, Idaho experimenters estimate that alcohol consumption for United States readily could provide outlet for about 2,000,000,000 bushels of corn, or 3,250,000,000 bushels of potatoes, or 2,500,000,000 bushels of wheat.

Fuels. (Cont'd)

Interest grows in alcohol. *Prairie Farmer*. v. 105, no. 5. March 4, 1933. p. 7. Progress made toward use of farm products for motor fuel.

More mileage from alcohol. *Prairie Farmer*. v. 105, no. 8. April 15, 1933. p. 4. Illinois tests show fine results.

Motor fuel from farm surpluses. By Gilbert Gusler. *Nebraska Farmer*. v. 75, no. 9. April 29, 1933. p. 3, 12.

Motor fuel from the farm: Editorial. *Agricultural Engineering*. v. 14, no. 4. April, 1933. p. 112.

Power alcohol. (A partial list of references.) 1933. 29p. Mimeographed. U. S. Department of Agriculture. Bureau of Agricultural Engineering.

Sale of alcohol-gasoline blends spreads in Illinois. *National Petroleum News*. v. 35, no. 12. March 22, 1933. p. 16. Approximately 28,000 gallons of alcohol-gasoline motor fuel have been distributed in three counties since 90-day test period was begun.

Gas Producers.

Untersuchungen an Holzgas erzeugern. By G. Kuhne, E. Fischer and F. Koch. *Technik in der Landwirtschaft*. v. 13, no. 7. July, 1932. p. 153-157; v. 13, no. 10. October, 1932, p. 212-216. Tests of gas producers using wood. Description of construction of generator and results of tests of different kinds of wood and sizes of pieces. Performance of engine on producer gas compared with that on benzol. Part two describes tests on a Kamper motor with different compression ratios and operation at different speeds. Discusses also tests made on generator time required to produce gas with maximum heat value and gives generator gas analyses.

Heating.

Heat output of concealed radiators. By E. A. Allcut. *Heating, Piping and Air Conditioning*. v. 5, no. 5. May, 1933. p. 267-274.

Hotbeds.

Electric hotbeds speed sprouting and maturing. *Electrical World*. v. 101, no. 17. April 29, 1933. p. 554. Uniform temperature of at least 85 deg. is essential for starting sweet potato plants. Preliminary results of experiments being carried on at Oklahoma Agricultural and Mechanical College.

Houses.

Housing objectives and programs. Washington, D.C., President's Conference on Home Building and Home Ownership, 1932. 345p. Reports of correlating committees on technological developments, legislation and administration, standards and objectives, education and service, organization programs - local and national, research.

Low-cost, fireproof concrete homes. 1932. 23p. Portland Cement Association. Chicago, Ill. Suggestions for design and construction.

Houses. (Cont'd)

New all-steel house is oilheated. By Norman E. Olds. Fuel Oil Journal. v. 11, no. 11. May, 1933. p. 12, 40.

New architectural service for homes. American Builder. v. 54, no. 3. December, 1932. p. 40. Architectural Guild of Small Home Design. Inc. formed by Chicago architects for purpose of maintaining system permitting architect to serve small home clients and building industry at low cost.

Planning the modern kitchen. American Builder. v. 54, no. 6. March, 1933. p. 18-20. Efficient kitchen floor plans and layouts. Kitchen construction and finishing material.

Precast concrete joists called key to firesafe homes. By E. W. Dihnart. Concrete. v. 41, no. 3. March, 1933. p. 15-16. Initial equipment not expensive; light-weight aggregates overcome objections to weight; long list of patents.

Small house of the future. By L. E. Olson. American Builder. v. 54, no. 3. December, 1932. p. 23-25, 46.

Insulation.

Building quiet into the home. Popular Mechanics Magazine. v. 59, no. 3. March, 1933. p. 457-458.

Insulation for boiler rooms and piping systems. Power Plant Engineering. v. 37, no. 5. May, 1933. p. 211-212. Furnace walls; Air heater and ducts; Piping.

Insulation of new and old houses. By G. D. Mallory. 1932. 73p. Canada. National Development Bureau. Gives usual methods of heat insulating new and old houses, and the principal types of insulating materials used.

Irrigation.

Contour check method of orchard irrigation. By J. B. Brown. 1933. 19p. California. Agricultural Extension Service. Circular no. 73.

Overhead irrigation of sugar beets. By G. J. Daley. Facts about sugar. v. 28, no. 3. March, 1933. p. 145. Summary of article in Western Irrigation. v. 15, no. 5. 1933. Discussion of experiment carried on at Holly Sugar Corporation in California, comparing surface irrigation, sub-irrigation and over head irrigation.

Proceedings fortieth annual convention Nebraska State Irrigation Association. 1932. 172p. Scottsbluff, Nebraska.

Pump irrigation: Readers tell how they boost yields with pumps. Nebraska Farmer. v. 75, no. 8. April 15, 1933. p. 3, 19.

Land.

Farm land as merchandise. Printers' Ink. v. 160, no. 10. September 8, 1932. p. 10, 12. How federal bank invokes advertising to promote salability in back-to-the-farm movement.

How to pick a good farm. By Hugh H. Bennett. Country Gentleman. v. 102, no. 10. October, 1932. p. 6, 30.

New stampede to the land. By Harry R. O'Brien. Country Gentleman. v. 102, no. 10. October, 1932. p. 3-5.

Miscellaneous.

Democracy marches on: Editorial. Engineering Experiment Station News. Ohio State University. v. 5, no. 2. April, 1933. p. 4-5. Depressions and unemployment are deplorable, but they do not condemn the machine; they show need for improvement in system of sharing products of industry.

Educational preparation for creative technical engineering leadership. By R. E. Doherty. Mechanical Engineering. v. 55, no. 2. February, 1933. p. 90-94. We must modify our educational objective. Acquisition of knowledge and of proficiency in manipulative techniques is only one-half; other is art of utilization of knowledge.

Farm family living in Wisconsin. 1933. 46p. Wisconsin. Agricultural Experiment Station. Research Bulletin no. 114.

Importance of agricultural education to the farmer. By Hon. H. A. Wallace. Extension Division News. Virginia Polytechnic Institute. v. 15, no. 7. May, 1933. p. 1-3.

Planning and planting the home grounds. By Franz A. Aust. 1933. 32p. University of Wisconsin. College of Agriculture. Extension Service. Circular no. 253.

Proceedings of the 46th annual convention of the Association of Land Grant Colleges and Universities held at Washington, D. C., November 14-16, 1932. Burlington, Vt., Free Press Printing Co., 1933. 512p.

Social effects of mass production. By Dexter S. Kimball. Mechanical Engineering. v. 55, no. 2. February, 1933. p. 83-89. It involves discarding of some economic ideas and taboos of Adam Smith and others who viewed industry as handicraft and worker as self-sufficient economic unit. And it also involves realization on part of ownership that it can no longer absolve itself from responsibility of either controlling business cycle or making effort to provide continuous dividends to industry as it now does to insure continuous returns to capital. If we shall achieve a semblance of economic freedom for all men, high standard of life, security, and delight in work, and leisure, it will be through much trouble and opposition such as men have always encountered in winning political and religious freedom.

Technical use that engineers make of United States Weather Bureau observations. By Charles H. Lee. Monthly Weather Review. v. 61, no. 1. January, 1933. p. 7-10. Precipitation; temperature; wind; evaporation; other data.

Miscellaneous. (Cont'd)

Tenth biennial report of the state engineer of New Mexico. July 1st, 1930 to June 30th, 1932. Santa Fe, New Mexico, 1933. 351p.

Motors.

Capacitor motors --- Various kinds and how to apply them. By F. W. Jessop. Acrologist. v. 9, no. 5. May, 1933. p. 7-8. Capacitor motor in fractional sizes is built like split phase or induction motor. Consists of stator equipped with start and main coil windings arranged like those of split phase motor; squirrel cage rotor; condenser, and generally there is switch working on centrifugal force principle to open circuit to start coils and start condenser.

Preliminary report on a proposed test code for synchronous machines. 1933. 24p. American Institute for Electrical Engineers, New York.

Muscle Shoals.

Dam the rivers for prosperity: Editorial. Electrical World. v. 101, no. 15. April 15, 1933. p. 474. \$1,000,000,000 dream for taxpayers to maintain.

Muscle Shoals: Editorial. Manufacturers Record. v. 102, no. 2. February, 1933. p. 11-12.

Uncle Sam in the power business. By Francis C. Fullerton. Magazine of Wall Street. v. 51, no. 9. February 18, 1933. p. 475, 504-505. Is President-Elect's proposal to operate Muscle Shoals a threat to public utility investments?

What pending Muscle Shoals legislation purposes: Editorial. Fertilizer Review. v. 8, no. 1. January, February, March, 1933. p. 4.

Pipes, and Piping.

Sewer pipe made with de-aired clay. By Chester R. Austin. Engineering Experiment Station News. Ohio State University. v. 5, no. 2. April, 1933. p. 3, 7-8.

Potatoes.

Potato growing in Massachusetts. 1933. 32p. Massachusetts State College. Extension Service. Extension Leaflet no. 20.

Poultry Houses and Equipment.

Irridiation of chicks. By M. Wayne Miller, Gordon E. Bearse, and Glen Cushing. Poultry Science. v. 12, no. 1. January, 1933. p. 21-22.

Transmission of ultra-violet light through window glass. By A. R. Winter and F. L. Bishop. Poultry Science. v. 12, no. 1. January, 1933. p. 9-16.

Power.

Ethyl gas on the farm. Implement and Tractor Trade Journal. v. 48, no. 8. April, 22, 1933. p. 10. America's farms annually use twenty billion horsepower from all sources of power.

Growing scarcity of horses and mules. Farm and Ranch. v. 52, no. 5. March 1, 1933. p. 10. Twelve years ago there were 20,092,000 horses and 5,656,000 mules on farms in this country. Now there are only 12,679,000 horses and 5,082,000 mules on these same farms plus new farms brought into cultivation.

Horse and mule power. By Tait Butler. Progressive Farmer. v. 48, no. 4. April, 1933. p. 20. Most that can now be predicted with any degree of confidence is that there will probably remain for many years yet, certain work on farm and on certain types of farms that can be most economically done by horses and mules, just as on other farms and other lines of work on same farms gasoline and electric power will do it most economically.

Power on the Tennessee River. Engineering News Record. v. 110, no. 19. May 11, 1933. p. 579-583. Federal legislation contemplates large increase in developed water power. Army engineers' study of power, navigation and flood control in entire river basin supplies basis for present planning. Editorial, p. 600-601.

Tractor and horse power in the wheat area of South Dakota. By C. M. Hampson and Poul Christopherson. 1932. 39p. South Dakota. Agricultural Experiment Station. Circular no. 6.

Public Works.

Self-liquidating projects. By Harvey Couch. Manufacturers Record. v. 102, no. 1. January, 1933. p. 24. \$20,000,000 extent of South's participation in Reconstruction Finance Corporation's loan covering wide variety of work assuring 17,530,000 man-hours of direct employment. Formal applications from ten southern states total more than \$40,000,000 for construction of self-supporting projects including bridges, water systems, power flood control and irrigation.

What public works? Editorial. Engineering News Record. v. 110, no. 18. May 4, 1933. p. 567. These projects are not to be sought in federal construction, for its amount is too small and it cannot be expanded quickly enough. Ready works are deferred state and city projects. Normal year's program of public-works construction in United States is about three billions. Nine-tenths of this sum consists of state and local construction.

Pumps and Pumping.

Flexible performance at high efficiency characterizes adjustable-blade, propeller-type pumps. By R. E. B. Shays. Power. v. 77, no. 5. May, 1933. p. 242-243. Low-head, adjustable-blade propeller-type pumps permit discharge to be varied over wide range against constant head or discharge to be held constant during large change in head, while maintaining comparatively high efficiency.

Pumps and Pumping. (Cont'd)

High speed Diesel engine as a prime mover for pumping stations. By Elliott Earl. Journal of New England Water Works Association. v. 47, no. 1. March, 1933. p. 61-73.

Pump storage compensates for power fluctuations in two different hydraulic development areas. By Rene Leonhardt. Power Plant Engineering. v. 37, no. 5. May, 1933. p. 222-223.

Spring water lifted 3,000 feet at Grand Canyon. By L. J. Cissna. Electric Journal. v. 30, no. 4. April, 1933. p. 142-144.
Versatility of supervisory control is displayed in its application to control of unattended pumping station over half mile down canyon by operator on rim.

Reclamation.

Italy subsidizes land reclamation. Engineering News Record. v. 110, no. 15. April 13, 1933. p. 466. Extension land-reclamation program to reclaim by irrigation and drainage more than 2,000,000 acres of now sparsely populated land. Ultimate cost of work is estimated at \$400,000,000. Purpose of program is many-sided, including increase of rural population and removal of excessive city population, placing nation on self-contained agricultural basis and creating background for sounder industrial development. Irrigation and drainage improvement work are supported by government up to seven-eighths total cost, while owner of land directly benefited may pay remaining one-eighth in as long a period as 30 years.

Research work of the Bureau of Reclamation. By Dr. Elwood Mead. Reclamation Era. v. 24, no. 5. May, 1933. p. 54-55, 57.
Design of the dam; Cement and concrete research.

Refrigeration.

Results of a feed refrigeration study. By W. N. Danner, Jr. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 99-100.

1. H.P. per ton of refrigeration. By Karl Wegemann. Refrigerating World. v. 68, no. 4. April, 1933. p. 14-16.

Roofs.

Thin cast-iron plates form durable factory roof. Construction Methods. v. 15, no. 2. February, 1933. p. 32-33.

Septic tanks.

Septic tank. By E. R. Gross. 1933. 4p. New Jersey. Agricultural Experiment Station. Circular no. 267.

Septic tanks for the farm. By John R. Haswell. 1927. 23p. Pennsylvania Agricultural Experiment Station. Circular no. 89.

Silos.

Reinforced concrete grain silos. T. J. Gueritte. Structural Engineering. n.s. v. 11, no. 3. March, 1933. p. 106-115. Historical survey; early methods of calculation of bins; grain conditioning; dimensions of bins. Discussion. April, 1933. p. 205-208.

Soils.

Settling velocities of gravel, sand and silt particles. By William W. Rubey. American Journal of Science. 5th series. v. 25, no. 148. April, 1933. p. 325-338. Stokes' formula; Impact formula; Combination of two formulae.

Soil conservation and development of Tennessee Valley: Editorial. Fertilizer Review. v. 8, no. 1. January, February, March, 1933. p.5.

Soil testing: Practical system of soil diagnosis. By C. H. Spurway. 1933. 16p. Michigan. Agricultural Experiment Station. Technical bulletin no. 132.

Spraying and Dusting.

Stationary spray plants in Georgia. By T. J. Harrold and H. E. Lacy. 1933. 28p. Georgia State College of Agriculture. Bulletin no. 429.

Standardization.

Standards yearbook, 1933. Compiled by the Bureau of Standards. Washington, Government Printing Office, 1933. 255p.

Steam.

Steam research. Mechanical Engineering. v. 55, no. 2. February, 1933. p. 113-117. Progress of work at Massachusetts Institute of Technology; U.S. Bureau of Standards.

Storage.

Quality of wheat as affected by farm storage. By C. O. Swanson and F. C. Fenton. 1932. 70p. Kansas. Agricultural Experiment Station. Technical bulletin no. 33. Problem of preventing damage in storage; Factors which affect the damage to wheat in storage; Investigations of farm - stored wheat; Laboratory experiments on the effect of heat; Respiration in wheat; Comparing bin types, Fort Hays station, 1929; Comparing types of ventilation, Fort Hays Station, 1930; Mechanical methods of ventilation, Fort Hays Station, 1931

Surveys.

New topographic survey favored in State of Massachusetts. Engineering News-Record. v. 110, no. 18. May 4, 1933. p. 568. Sponsored before legislative committee on ways and means. Total cost, spread over ten years, would be \$750,000 of which half would be borne by federal government.

Tires.

Low-pressure "air tires" for tractors. Public Works. v. 64, no. 3. March, 1933. p. 34. Tires tested on Model "U" tractor were 6.50 x 16 front and 11.25 x 24 rear. Inflation pressure in front tires was 16 pounds, in rear tires 12 pounds. Rear tires have surface contact on ground of 113 square inches and ground pressure of 15 pounds per square inch. Tests showed that with air tires much less power was required to pull same load with corresponding saving in fuel. At five miles per hour, one-half as much power was required to move tractor. In loose soil or sand, air tires performed with equal or greater success. In wet ground, air tire performance was improved by use of chains, and there was no difficulty with these clogging because constant flexure of tire dislodged caked soil. No data available on life of these tires.

Pneumatic tires for tractors: Letter from Frank N. G. Kranick. Agricultural Engineering. v. 14, no. 4. April, 1933. p. 108-109.

Trucks.

Selecting a farm motor truck. By F. L. Edman. Heard's Dairyman. v. 78, no. 3. February 10, 1933. p. 56.

Ventilation.

Dairy-stable ventilation. By F. L. Fairbanks and A.M. Goodman. Revised 1932. 40p. Cornell University. Extension Bulletin no. 151.

Fresh air for the cows: Three reasons why I would want ventilation in my dairy barn. By C. C. Cary. New England Homestead. v. 106, no. 6. March 18, 1935. p. 4, 9. 1. Give even temperature. 2. Consider health of animals housed. 3. Depreciation of buildings.

Walls.

Interior walls and wall finishes. American Architect. v. 142, no. 2612. October, 1932. p. 76-80. Guide to selection and use of wall construction and finishing materials.

Relation of bond between brick and mortar and leaky masonry walls. By E. F. Gallagher. Brick and Clay Record. v. 82, no. 4. April, 1933. p. 133-134.

Waterpower.

Sixth annual report of Division of Water Power and Control for the year ending December 31, 1932. 1933. 26p. New York, Conservation Department.

Water Supply.

Ground-water resources of Judith Basin, Montana. By Eugene S. Perry. 1932. 30p. Mimeographed. Montana. Bureau of Mines and Geology. Memoir no. 7.

Water Supply. (Cont'd)

Possibilities of ground-water supply for certain towns and cities of Montana. By Eugene S. Perry. 1933. 49p. Mimeographed. Montana. Bureau of Mines and Geology. Miscellaneous Contributions no. 2.

Relation of geology to the groundwater supplies of New England. By Irving B. Crosby. Journal of New England Water Works Association. v. 47, no.1. March, 1933. p. 74-95.

Salinity in Sacramento River delta area reviewed. Engineering News Record. v. 110, no. 15. April 13, 1933. p. 460-461. Discussion of report by California division of water resources.

Surface water supply of the United States, 1931. Part 3. Ohio river basin. Washington Government Printing Office, 1933. 346p. U.S. Geological Survey. Water-Supply Paper no. 713.

Tennessee basin 20 per cent developed, says Department. Electrical World. v. 101, no. 17. April 29, 1933. p. 537. Increase in demand for power will come through increased urban and rural domestic use, development of industries in states composing basin and in surrounding states and electrification of railroads where traffic conditions will justify cost.

Woods.

Wood destruction by sulphuric acid spraying. By R. K. MacDowall. 1933. 36p. Institute for research in agricultural engineering. University of Oxford.

Welding.

Recent developments in welding building piping. By S. C. Clark. Heating and Ventilating. v. 20, no. 2. February 1933. p. 28-31. New equipment; Machine cutting; Present fabricating practice; Brass and copper pipe; Welding fittings; Small pipe welding; Welder training.

Structural steel welding. By Irving H. Bowman. Architectural Forum. v. 58, no. 2. February, 1933. p. 165-172. Compilation of fundamental data relating to nomenclature, design, specification and inspection of structural steel welding.

Windmills.

Wind electric plants studied. Implement and Tractor Trade Journal. v. 47, no. 9. May 6, 1933. p. 8. Iowa investigation shows higher first costs but lower maintenance. Large batteries needed for light velocity periods.

Wood.

Prevention of dry rot in buildings. Engineering News Record. v. 110, no.15. April 13, 1933. p. 470. Precautions: 1. Build on well-drained site; 2. Secure well-seasoned lumber from yard where rot in foundations and lumber piles is not tolerated; 3. Do not allow selected material to lie on ground after it has been delivered; 4. Untreated lumber should not be allowed to come in contact with soil, or foundation or walls that are liable to be damp; 5. Wood flooring should never be laid directly on soil or concrete unless chemically preserved; 6. Ample ventilation should be provided.

